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FORTY-FIVE YEARS OF U. S. NAVAL MORBIDITY
STATISTICS OF DEGENERATIVE DISORDERS.BY CHARLES N. FISKE, M.D., *Surgeon, U. S. Navy.*

It might well be an old wag to say that the navy has had a floating population; ethnically this fact is as important as that its personnel is derived from the civil population; any observations concerning its inherent traits reflect with considerable accuracy corresponding conditions among civilians of similar sex, age, physique, and intellect. The word "accuracy" is used advisedly for the reason that these observations are unusually trustworthy from being made by specially trained officers who maintain constant relations with their clientele; this is particularly true of naval medical officers whose association with the navy personnel is continuous as compared with the casual observations of civilians who rarely consult their physicians so long as they consider their health normal. Moreover the military services are practically the only groups of our population concerning whom complete morbidity statistics have been published; their officers and men are undoubtedly the only large community of whom fairly frequent periodical physical examinations have been required and in whom the movement of disease has been recorded continuously for 45 years.

Standards of age, physique, and intellect for enlisted men who have constituted over 90 per cent. of the navy and marine corps have changed perceptibly but not materially for present considerations; for while the average age has been reduced and physical and intellectual requirements have certainly risen, the proportion of "continuous service" men as shown by percentage of reënlistments has probably increased sufficiently to offset any undue advantage attributable to more discriminating selection at recruiting stations in recent years.

Statements, more or less arbitrary, are becoming commonplace, to the effect that the degenerative diseases of mature age, such as the scleroses and malignant proliferations, are insidiously although steadily increasing among the general

population while preventive medicine is occupied with successfully diminishing morbidity and mortality from the exanthemata and infections of youth, the inference being that sanitation and hygiene should begin to be more concerned with the former. It may well be doubted if these familiar ideas, which already approximate the category of platitudes, are based upon precise data or even tenable premises. Let it be recalled that 25 years ago when appendicitis became the vogue it was generally questioned if the disease was at all prevalent during the preceding generations and it was only after extended delving into old case histories and supposedly antiquated medical literature that it was found to be by no means a new entity. Standards of living change; published intelligence increases; precision in diagnosis certainly improves, although yet remote from perfection; disease terminology and classification advance; hospital clinics serve classes of people varying from one decade to the succeeding; and surgical practice, medical art, and even the so called pure sciences can not be acquitted of insecure impulse and bias. Many such and other tendencies occur to invite pause when one is told that cancer is alarmingly on the increase or that the strenuous high tension, under which many (but not necessarily average) Americans are pursuing dollars, is bringing the nation to doom through Bright's disease and arterio sclerosis, when the influence of the compound microscope, Virchow's cellular pathology, and the sphygmomanometer may have been the insidious factors.

In the first place does it always occur to the fluent speaker and facile writer of medical altruism that, as Sir Victor Horsley believed, we have been sparing the weak and unfit in youth to furnish material for degenerative disorders in maturity thereby attempting to defeat Nature's provision for the survival of the fittest? Over how many decades may a given population continue to boast of a death rate of 12 to 15 per thousand if the mathematical absurdities involved are to be judged in the light of human experience?

The current generation of health publicists, while admitting that a life saved in youth must of necessity cease from some cause in later years, may preach that disorders of age are or

should be as preventable as those of youth, but it will take at least the next generation to preach the hope that humans need never die at all.

The tendencies which prompt such hypotheses should be susceptible of demonstration through very interesting studies of mortality rates in definite age groups for special diseases of the registration area published by the Vital Statistics Division of the United States Census, which constitute "another story" and are not practicable in this paper.

The 10,000 to 70,000 males, aged 16 to 64 years, in the United States Navy and Marine Corps throughout 45 years are conceded to be all too few upon which to base any dogmatic conclusions in this direction, yet the verdict of "not yet proved" which haunts the minds of some has prompted a study of the navy's morbidity statistics to demonstrate a tendency to confirm or deny the impressions already stated as loosely thought facts. The tabulation will occupy several weeks of spare hours and one hopes that, whatever tendency may be declared in the result, it will possess some value and not be in vain.

If it be granted that an unbiased analysis of the movement of so called degenerative diseases among the naval personnel appointed and recruited from all geographical sections of the nation's civil population would be worth while, the first step must be to determine what classes and entities of disease merit inclusion and what factorial value shall be assigned to cases, invalidings, and deaths.

During the present troublous times a writer has to exhibit proof of his neutrality, and then anyone but himself may still question it. One can confess to such preconceptions based upon personal experience as the positive correlation of neuro psychic hypertension and glycosuria, dental caries and appendicitis which have been rather discredited by his own analyses of naval morbidity statistics; one feels quite indifferent to the result, if any, of the present compilation, being determined to perpetrate the paper anyway to stimulate possibly some other doubter to a more profitable investigation.

The use of statistics inductively to prove a theory would not be unique, but it is herein conscientiously denied.

Unfortunately one must make pretension to close familiarity

with naval morbidity data, their inherent and special defects as well as those common to the medical profession and vital statistics at large; for this reason one must decline to defend in detail, which would require many pages, his selection of diseases and methods of determining comparative loss rates.

Pursuant to the foregoing preamble the incidence, invaliding and death rates for 5 classes of scleroses have been plotted (Plate I) for the Navy and Marine Corps for the years 1871 to 1914 inclusive. Although 15 curves upon the same sheet may promote confusion it is believed that their composite represents more intelligently the movement of these diseases than would the resultants obtained by their combination; particularly will widely divergent accidental movements be declared for explanation without reflecting discredit upon steady tendencies.

Most of the titles selected for tabulation for 45 years have been arbitrarily grouped as follows; the only mathematical device utilized, and this really of negligible consequence, is the assumption during certain years that any patient deserting or going on leave represented half the loss of an actual invaliding from the service and has been computed as such:

(1) CIRCULATORY SCLEROSES.

Aneurysm	Intercerebral hemorrhage
Angina pectoris	Valvular disease, heart
Apoplexy	Varix
Arterial sclerosis	Myocarditis
Acute cardiac dilatation	Rupture of heart
Chronic cardiac dilatation	Cardiac hypertrophy
Embolism	Cordis inhibitio
Acute endocarditis	Cordis adiposum
Chronic endocarditis	Degeneratis cordis
Epidural hemorrhage	Atheroma
Paralysis cordis	

(2) MALIGNANT PROLIFERATIVE SCLEROSES.

Carcinoma	Epithelioma
Sarcoma	Malignant hypertrophy of prostate

(3) PULMONARY SCLEROSES.

Asthma	Emphysema
Chronic bronchitis	

(4) VISCERAL SCLEROSSES.

Diabetes insipidus	Uraemia
Diabetes mellitus	Haematuria (non specific)
Gout, acute and chronic	Ascites
Gastric ulcer	Haematomesis
Prostatitis (non infective)	Albuminuria
Nephritis, acute and chronic	Hydrops
Lithaemia	Anasarca
Bright's disease	

(5) NEURO-SCLEROSSES.

Dementia	Monoplegia
Dementia paralytica	Paralysis agitans
Dementia precox	Sclerosis lateral
Hemiplegia (non traumatic)	Sclerosis posterior
Locomotor ataxia	Multiple sclerosis
Paraplegia	Acute ascending paralysis
Sclerosis disseminated	Cirrhosis cerebri
Amyotrophic lateral sclerosis	Senility
Syringomyelia	

The chart conveys the first impression (a) that there was a sharp rise in nearly all rates in 1879; (b) that incidence rates have since tended to fall consistently except for the circulatory sclerosis (organic cardiac and valvular disease) during the last 20 years; (c) that during certain years there have been wide fluctuations in pulmonary and circulatory diseases; (d) that mortality rates have not fluctuated as widely as have incidence or even invaliding rates; (e) that during the last 20 years upwards of two thirds of the cases of circulatory and neuro sclerosis have been invalided so that case invalidity and case mortality have risen decidedly which either is no credit to the clinician or reflects upon the diagnostics of earlier times. The opinion is ventured that the coefficient of unreliability of naval vital statistics would probably be proportional to the remoteness of decades with the maximum error prior to 1879 when decided improvement in collection and compilation occurred; invalidings were first classified in published reports in 1879.

Any high rate for 1903 "is undoubtedly due to the large number of recruits admitted to the service during the year" according to the report of the Surgeon General covering that

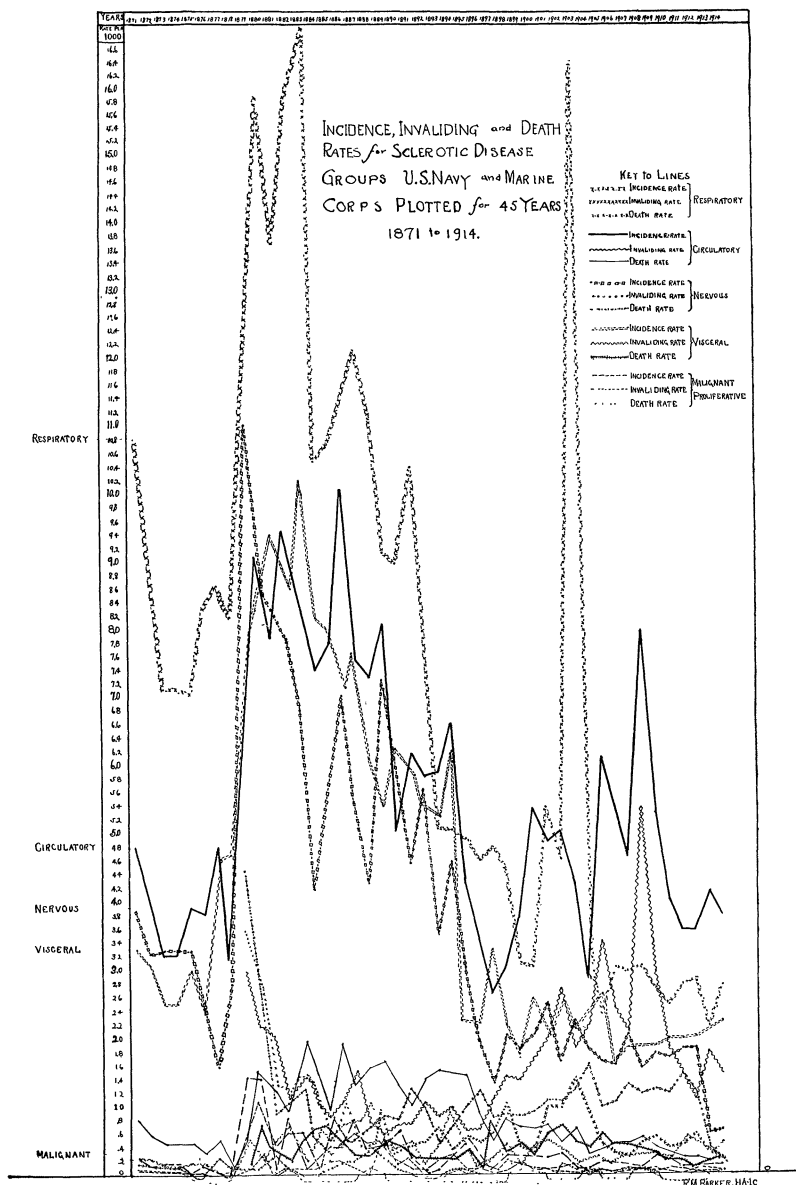


PLATE I.

year. There were accepted 15 per cent. more enlisted men in 1903 than during 1902 and with a lower percentage of rejections than formerly on account of necessarily rapid work of traveling recruiting parties which enrolled nearly one half of the men, practically all recruits, and accepted 59.5 per cent. as contrasted with 53.7 per cent. for the previous year. There were 556 cases of "chronic bronchitis" during 1903 which, as compared with 103 the year before and 86 the year following, accounts for the high rate; this was a diagnosis frequently made in recruits with chronic cough whom it was not policy to retain long enough in the service to determine the underlying cause.

The rise in incidence and invaliding rates for circulatory scleroses in 1905 and 1908 is similarly explained being largely accounted for by recruits with "chronic valvular heart disease," who should never have been accepted. There is, nevertheless, in spite of explanations of variable recruiting influence, a perceptible resultant tendency for circulatory rates to rise and this closely parallels the curve for admissions for syphilis which gradually rose to 27.18 per thousand in 1911 and have since declined to 19.84; for present purposes one is more concerned with the sequelae of venereal diseases than their incidence and the fact that the invaliding rate for all venereal disease has declined steadily from 4.28 per thousand in 1909 to 1.71 in 1914 may be assumed to account for the current decline in rates for circulatory scleroses.

Subject to the conditions indicated in the first part of this paper and to the qualification that small numbers produce rather sharp fluctuations, one concludes that degenerative diseases in the United States Navy and Marine Corps have decreased during the past four decades and to the extent that these data may be considered to reflect the movement of cancer, paralysis, nephritis, and chronic heart, vascular, and pulmonary diseases (except tuberculosis) among the general population there is sufficient indication of similar decreases to justify withholding the prevalent assumption that these diseases are tending to increase until more scientific precision can be obtained in general morbidity statistics.